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STATEMENT BY APPLICANT

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Sheet

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Of

8

COMPLETE IF KNOWN

Application Number	10/026,019
Filing Date	December 27, 2001
First Named Inventor	Ralph Johnson
Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02674 US

U.S. PATENT DOCUMENTS

Examiner Initials ¹	Cite No ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
D		US 4445218		04-24-1984	Coldren	
		US 4608697		08-26-1986	Coldren	
		US 4622672		11-11-1986	Coldren et al.	
		US 4829347		05-09-1989	Cheng et al.	
		US 4873696		10-10-1989	Coldren et al.	
		US 4896325		01-23-1990	Coldren	
		US 5045499		09-03-1991	Nishizawa et al.	
		US 5082799	A	01-21-1992	Holmstrom et al.	
		US 5245622	A	09-14-1993	Jewell et al.	
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		US 5293392	A	03-08-1994	Shieh et al.	
		US 5343487	A	08-30-1994	Scott et al.	
		US 5358880	A	10-25-1994	Lebby et al.	
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		US 5491710	A	02-13-1996	Lo	
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		US 5568504	A	10-22-1996	Kock et al.	
✓		US 5588995	A	12-31-1996	Sheldon	
		US 5631472	A	05-20-1997	Cunningham et al.	
		US 5693180	A	12-02-1997	Furukawa et al.	
		US 5719891	A	02-17-1998	Jewell	
		US 5719894	A	02-17-1998	Jewell et al.	

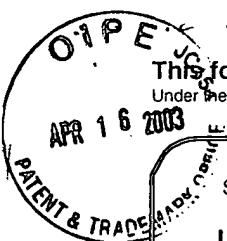
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**INFORMATION DISCLOSURE
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Sheet 2 Of 8**COMPLETE IF KNOWN**

Application Number	10/026,019
Filing Date	December 27, 2001
First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02674 US

DW	US	5719895	A	02-17-1998	Jewell et al.	
	US	5729567	A	03-17-1998	Nakagawa	
	US	5732103	A	03-24-1998	Ramdani et al.	
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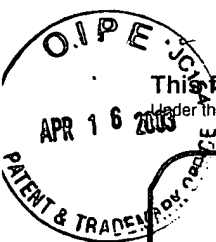
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Sheet 3 of 8

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Filing Date	December 27, 2001
First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02674 US

✓	US	6121068	A	09-19-2000	Ramdani et al.	
	US	6127200	A	10-03-2000	Ohiso et al.	
	US	6148016	A	11-14-2000	Hegblom et al.	
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	US	2002/ 0090016	A1	07-11-2002	Coldren et al.	
	US	2002/ 0131462	A1	09-19-2002	Line et al.	
✓	US	2003/ 0053510	A1	03-20-2003	Yuen et al.	

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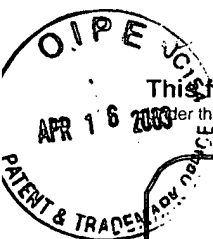
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FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No ¹	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T ⁶
		Country Code ³	Number ⁴	Kind Code ⁵ (if known)				
DW		EP	0 740 377	A1	10-30-1996	Hewlett-Packard Company		
		EP	0 740 377	B	10-30-1996	Hewlett-Packard Company		
		EP	0 765 014	A1	03-26-1997	France Telecom		
		EP	0 765 014	B1	07-28-1999	France Telecom		
		EP	0 822 630	A1	02-04-1998	Hewlett-Packard Company		
		EP	0 874 428	A2	10-28-1998	Motorola, Inc.		
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		EP	1 294 063	A1	03-19-2003	Avalong Photonics AG		
		JP	57026492	A	02-12-1982	NEC Corp.		
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		WO	00/033433	A2	06-08-2000	Arizona Board of Regents		
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		WO	00/052789	A2	02-29-2000	The Regents of the University of California		
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		WO	00/065700	A2	11-02-2000	Gore Enterprise Holdings, Inc.		
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		WO	01/016642	A2	03-08-2001	Agility Communications		
		WO	01/016642	A3	03-08-2001	Agility Communications		
		WO	01/017076	A2	03-08-2001	The Regents of the University of California		
		WO	01/017076	A3	03-08-2001	The Regents of the University of California		

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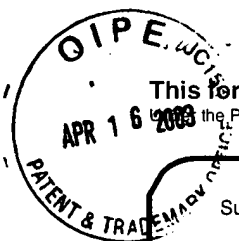
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DW	WO	01/018919	A1	03-15-2001	The Regents of the University of California		
	WO	01/024328	A2	04-05-2001	Agility Communications		
	WO	01/024328	A3	04-05-2001	Agility Communications		
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	WO	02/003515	A2	01-10-2002	Agility Communications, Inc.		
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	WO	02/084829	A1	10-24-2002	Cielo Communications, Inc.		

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
DW		ALMUNEAU, G., et al., "Accurate control of Sb composition in AlGaAsSb alloys on InP substrates by molecular beam epitaxy", article, Journal of Crystal Growth, Vol 208, 05-06-1999, pgs 113-6.	
		ALMUNEAU, G., et al., "Improved electrical and thermal properties of InP-AlGaAsSb Bragg mirrors for long-wavelength vertical-cavity lasers", article, IEEE Photonics Technology Letters, Vo. 12, No 10, Oct 2000, pgs 1322-4.	
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		BLUM, O., et al., "Electrical and optical characteristics of AlAsSb/BaAsSb distributed Bragg reflectors for surface emitting lasers", article, Applied Physics Letters, Vol 67, No 22, 11-27-1995, pgs 3233-5.	
		BLUM, O., et al., "Highly reflective, long wavelength AlAsSb/GaAsSb distributed Bragg reflector grown by molecular beam epitaxy on InP substrates", article, Applied Physics Letters, Vo. 66, No 3, 01-16-1995, pgs 329-31.	
		BOUCART, J., et al., "1mW CW-RT monolithic VCSEL at 1.55 μm ", article, IEEE Photonic Technology Letters, Vol 11, No 6, Jun 1999, pgs 629-31	

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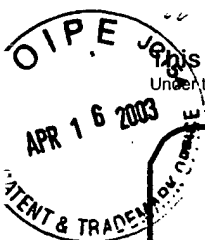
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	CAMPBELL, J., et al., "Quantum dot resonant cavity photodiode with operation near 1.3 μm wavelength", article, Electronics Letters, Vol 33, No 15, 07-17-1997, pgs 1337-9.
	CHANG, C., et al., "Parasitics and design considerations on oxide-implant VCSELs", article, IEEE Photonics Technology Letters, Vol 13, No 12, Dec 2001, pgs 1274-6.
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	DOWD, P., et al., "Long wavelength (1.3 and 1.5 μm) photoluminescence from InGaAs/GaPAsSb quantum wells grown on GaAs", article, Applied Physics Letters, Vol 75, No 9, 08-30-1999, pgs 1267-9.
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	GUDEN, M., et al., "Material parameters of quaternary III-V semiconductors for multiplayer mirrors at 1.55 μm wavelength", article, Modeling Simulation Material Science Engineering, Vol 4 1966, pgs 349-57.
	GUO, C., et al., "Theoretical investigation of strained InGaAs/GaPAsSb type-II quantum wells on GaAs for long wavelength (1.3 μm) optoelectronic devices", post-conference paper, Dept of Electrical Engineering & Center for Solid State Electronics Research, ASU, Tempe, AZ, Apr 1999, pgs 30-1.
	GUY, D., et al., "Theory of an electro-optic modulator based on quantum wells in a semiconductor étalon", conference paper, Quantum Well and Superlattice Physics, Mar 23/4, 1987, pgs 189-96.
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	HALL, E., et al., "Selectively etched undercut apertures in AlAsSb-based VCSELs", article, IEEE Photonics Technology Letters, Vol 13, No 2, Feb 2001, pgs 97-9.
	HEGBLOM, E., et al., "Small efficient vertical cavity lasers with tapered oxide apertures", article, Electronics Letters, Vol 34, No 9, 04-30-1998, pgs 895-6.
	HEROUX, J., et al., "Optical investigation of InGaAsN/GaAs strained multi-quantum wells", 20 th North American Conference on Molecular Beam Epitaxy, Oct 1-3, 2001, pg 2.
	HONG, Y., et al., "Improving Ga(In)Nas properties by migration-enhanced epitaxy and superlattices", 43 rd 2001 Electronic Material Conference, Session G, Paper G10, 06-27-2001.
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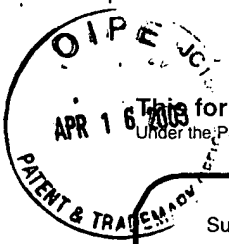
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Sheet 7 Of 8

COMPLETE IF KNOWN

Application Number	10/026,019
Filing Date	December 27, 2001
First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02674 US

<input checked="" type="checkbox"/>	KIM, J., et al., "Epitaxially-stacked multiple-active-region 1.55 μm lasers for increased differential efficiency", article, Applied Physics Letters, Vol 74, No 22, 05-31-1999, pgs 3251-3.	
<input type="checkbox"/>	KIM, J., et al., "Room-temperature, electrically-pumped multiple-active-region VCSELs with high differential efficiency at 1.55 μm ", article, Electronics Letters, Vol 35, No 13, 06-24-1999, pgs 1-2.	
<input type="checkbox"/>	KOTAKI, Y., et al., "GaInAsP/InP surface emitting layer with two active layers", article, Extended Abstracts of the 16 th (1984 International) conference on Solid State Devices and Materials, pgs 133-6.	
<input type="checkbox"/>	KOYAMA, F., et al., "Room temperature CWS operation of GaAs vertical cavity surface emitting laser", article, The Transactions of the IEICE, Vol E71, No 11, Nov 1988, pgs 1089-90.	
<input type="checkbox"/>	LARSON, J., et al., "GaInNAs-GaAs long-wavelength vertical-cavity surface-emitting laser diodes", article, IEEE Photonics Technology Letters, Vol 10, No 2, Feb 1998, pgs 188-90.	
<input type="checkbox"/>	LEE, Y., et al., "Physics and nonlinear device applications of bulk and multiple quantum well GaAs", invited paper, SPIE Vol 792 Quantum Well and Superlattice Physics (1987), pgs 128-133.	
<input type="checkbox"/>	LI, J., et al., "Persistent photoconductivity in $\text{Ga}_{1-x}\text{In}_x\text{N}_y\text{As}_{1-y}$ ", article, Applied Physics Letters, Vol 75, No 13, 09-27-1999, pgs 1899-1901.	
<input type="checkbox"/>	MIRIN, R., et al., "1.3 μm photoluminescence from InGaAs quantum dots on GaAs", article, Applied Physics Letter 67 (25), 12-18-1995, pgs 3795-7.	
<input type="checkbox"/>	NAKAGAWA, S., et al., "1.55 μm InP-lattice-matched VCSELs with AlGaAsSb-AlAsSb DBRs", article, IEEE Journal on Selected Topics in Quantum Electronics, Vol 7, No 2, Mar/Apr 2001, pgs 224-30.	
<input type="checkbox"/>	NAKAHARA, K., et al., "1.3 μm continuous-wave lasing operation in GaInNAs quantum-well lasers", article, IEEE Photonics Technology Letters, Vol 10, No 4, Apr 1998, pgs 487-8.	
<input type="checkbox"/>	NAONE, R., et al., "Tapered air apertures for thermally robust VCL structures", article, IEEE Photonics Technology Letters, Vol 11, No 11, Nov 1999, pgs 1339-41.	
<input type="checkbox"/>	NELSON, D., et al., "Band nonparabolicity effects in semiconductor quantum wells", article, Rapid Communications, Vol 35, No 17, 02-15-1987, pgs 7770-7773.	
<input type="checkbox"/>	OHNOKI, N., et al., "Superlattice AlAs/AlInAs-oxide current aperture for long wavelength InP-based vertical-cavity surface-emitting laser structure", article, Applied Physics Letters, Vol 73, No 22, 11-30-1998, pgs 3262-4.	
<input type="checkbox"/>	ORTSIEFER, M., et al., "Submilliamp long-wavelength InP-based vertical-cavity surface-emitting laser with stable linear polarization", article, Electronics Letters, Vol 36, No 13, 06-22-2000, pgs 1124-6.	
<input type="checkbox"/>	PETERS, M., et al., "Realization and modeling of a pseudomorphic $(\text{GaAs}_{1-x}\text{Sb}_x\text{In}_y\text{Ga}_{1-y}\text{As})/\text{GaAs}$ bilayer-quantum well", article, Applied Physics Letter 67 (18), 10-30-1995, pgs 2639-41.	
<input type="checkbox"/>	PETERS, M., et al., "Band-gap engineered digital alloy interfaces for lower resistance vertical-cavity surface-emitting lasers", article, Applied Physics Letters, Vol 63, No. 25, Dec 1993, pgs 3411-3.	
<input type="checkbox"/>	PIPREK, J., et al., "Thermal comparison of long-wavelength vertical-cavity surface-emitting laser diodes", Electronics Letters, 05-26-1994, Vol 30, No 11, pgs 866-868.	
<input type="checkbox"/>	PIPREK, J., et al., "Minimum temperature sensitivity of 1.55 μm vertical-cavity lasers at -30 nm gain offset", article, Applied Physics Letters, Vol 72, No 15, 04-13-1998, pgs 1814-6.	
<input type="checkbox"/>	RAJA, M., et al., "Novel wavelength-resonant optoelectronic structure and its application to surface-emitting semiconductor lasers", article, Electronics Letters, 09-01-1988, Vol 24, No 18, pgs 1140-1142.	
<input checked="" type="checkbox"/>	SCOTT, J., et al., "High efficiency submilliamp vertical cavity lasers with intracavity contacts", article, IEEE Photonics Technology Letters, Vol 6, No 6, Jun 1994, pgs 678-80.	

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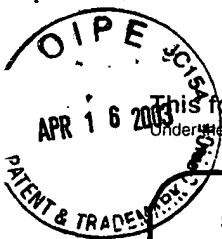
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Sheet 8 Of 8

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Application Number	10/026,019
Filing Date	December 27, 2001
First Named Inventor	Ralph Johnson
Group Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-02674 US

12	SEKIGUCHI, S., et al., "Long wavelength GaInAsP/InP laser with n-n contacts using AlAs/InP hole injecting tunnel junction", article, Japanese Journal of Applied Physics, Part 2, No 4B, 04-15-1999, pgs L443-5.
1	STARCK, C., "Long wavelength VCSEL with tunnel junction and metamorphic AlAs/GaAs conductive DBR", article, Physics Review B, Vol 39, No 3, 01-15-1989, pgs 1871-83.
	SUGIMOTO, M., et al., "Surface emitting devices with distributed Bragg reflectors grown by highly precise molecular beam epitaxy", article, Journal of Crystal Growth, Vol 127, 1993, pgs 1-4.
	UCHIDA, T., et al., "CBE grown 1.5 μ m GaInAsP-InP surface emitting lasers", article, IEEE Journal of Quantum Electronics, Vol 29, No 6, Jun 1993, pgs 1975-80.
	VAN DE WALLE, C. "Band lineups and deformation potentials in the model-solid theory", article, Physical Review B, Vol 39, No 3, 01-15-1989, pgs 1871-83.
	WHITAKER, T., "Long wavelengths VCSELs move closer to reality", article, Compound Semiconductor, July 2000, pgs 65-7.
	YAMADA, M., et al., "Low-threshold lasing at 1.3 μ m from GaAsSb quantum wells directly grown on GaAs substrates", article, IEEE, 0-7803-4947, 04/1998, pgs 149-50.
	YAMADA, M., et al., "Room temperature low-threshold CW operation of 1.23 μ m GaAsSb VCSELs on GaAs substrates", article, Electronics Letters, 03-30-2000, Vol 36, No 7, pgs 637-638.
	YANG, X., et al., "High performance 1.3 μ m InGaAsN:Sb/GaAs quantum well lasers grown by molecular beam epitaxy", journal article, Journal of Vacuum Science and Technology B Microelectronics and Nanometer Structures, Vol. 18, No 3, Oct 1999, pgs 1484-7.
	YANG, X., et al., "InGaAsNSb/GaAs quantum wells for 1.55 μ m lasers grown by molecular-beam epitaxy", article, Applied Physics Letters, Vol 78, No 26, pgs 4068-70.
	YANO, M., et al., "Time-resolved reflection high energy electron diffraction analysis for atomic layer depositions of GaSb by molecular beam epitaxy", article, Journal of Crystal Growth, Vol 146, 1995, pgs 349-53.
✓	YUEN, W., et al., "High-performance 1.6 μ m single-epitaxy top-emitting VCSEL", article, Electronics Letters, Vol 36, No 13, 06-22-2000, pgs 1121-3.

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DN		ANAN, T., et al., "Continuous-wave operation of 1.30 um GaAsSb/GaAs VCSELs", article, Electronics Letters, Vol 37, NO 9, 04-26-2001, pgs 566-7.	
DN		YANG, X., et.al., "High-temperature characteristics of 1.3 um InGaAsN:Sb/GaAs multiple-quantum-well lasers grown by molecular-beam epitaxy", article, Applied Physics Letters, Vol 76, No 7, 02-14-2000, pgs 795-7.	
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Sheet	1	Of	2
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Application Number	10/026,019
Filing Date	December 20, 2001
First Named Inventor	Ralph Johnson
Art Unit	2828
Examiner Name	Tuan M Nguyen
Attorney Docket Number	V637-002674 US

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
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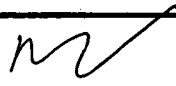
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